

State of California
Department of Fish and Game

DOCKET

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Memorandum

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Date: December 31, 2008

To: **Mary Dyas**
California Energy Commission
Environmental Office, Siting Division
1516 Ninth Street, MS-40
Sacramento, California 95814

From: **Jeffrey R. Single, Ph.D., Regional Manager**
Department of Fish and Game – Central Region

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Subject: Review of Carrizo Energy Solar Farm Preliminary Staff Assessment (PSA)

The Department of Fish and Game (DFG) has reviewed the PSA for the Carrizo Energy Solar Farm (CESF). Project implementation would result in construction of approximately 195 Compact Linear Fresnel Reflector solar concentrating lines and associated steam drums, steam turbine generators, air-cooled condensers, and infrastructure, producing up to a nominal 177 megawatts net. The CESF site would encompass approximately 640 acres in Section 28, Township 29 South, Range 18 East, in the California Valley and La Panza NE United States Geological Survey (USGS) 7.5 minute quadrangle maps (Quad), adjacent to California State Route 58 (SR-58). The 640-acre site would be surrounded by fencing impermeable to wildlife, including the State threatened San Joaquin kit fox (*Vulpes macrotis mutica*). An additional 380-acre "construction laydown area" would be located entirely in Section 33, Township 29 South, Range 18 East, in the California Valley Quad, which is directly south of the solar farm site, and across SR-58. It is our understanding that Section 33 would also be utilized as an employee parking area during construction of the facility.

DFG is concerned that the PSA does not present a mitigation plan that would satisfy the California Endangered Species Act (CESA) requirements. The Final Staff Assessment (FSA) must contain avoidance, minimization, and mitigation measures that fully mitigate Project-related direct and indirect impacts to San Joaquin kit fox if the FSA is to support Incidental Take Permit issuance criteria. The FSA's mitigation plan should demonstrate that full mitigation for all the Project's impacts to kit fox will be achieved, in addition to avoidance and minimization measures, through compensatory habitat mitigation of a specific amount and in a specific area. Funding for such mitigation must be assured in advance of Project-related impacts. DFG is in full support of the wildlife corridor analysis identified in the PSA, which would help to refine identification of mitigation needs, but we note that the PSA currently defers the formulation of compensatory habitat mitigation measures to a Biological Resources Mitigation Implementation and Monitoring Plan that would be approved after the FSA is prepared. The FSA should include the amount and location of habitat compensation which would mitigate the direct "take," habitat loss, habitat fragmentation effects, increased road mortality risks, species wide effects posed by narrowing or blockage of a north-south corridor to the core Carrizo kit fox population, and other effects to kit fox identified in the PSA and this memorandum. The compensatory habitat mitigation identified in the FSA should also include mitigation to reduce the tule elk and pronghorn home range losses and habitat fragmentation to less than significant levels.

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Mary Dyas
December 31, 2008
Page 2

Bird flight diverters should be installed on the proposed guy wires and the site should be monitored for their effectiveness for a minimum of five years. If unauthorized "take" of avian species occurs, then the applicant should be required to modify Project features to prevent additional future "take" of birds. Modifications and monitoring should continue until it is determined that unauthorized "take" is no longer occurring.

Direct and indirect biological effects of vegetative screening, proposed to reduce aesthetic impacts, should be determined. The locations of vegetative screens should be identified and surveyed for biological resources. Effects on kit fox and pronghorn predation habitat use should also be considered.

Pursuant to Fish and Game Code Section 1600 et seq., DFG has regulatory authority with regard to activities occurring in streams and/or lakes that could adversely affect any fish or wildlife resource. Placing temporary crossings in the creek present in Section 33 would normally be conducted under a 1600 Agreement, and the Project proponent would be required to submit a Lake or Streambed Alteration Notification to DFG for this Project. We encourage the applicant to avoid impacting the streambed in this area by reconfiguring the laydown area to avoid use of the area south and west of the drainage; or, alternatively, by spanning the creek with a temporary structure to minimize impacts to species which may utilize the creek, including the California Species of Special Concern western spadefoot toad (*Spea hammondi*).

California Environmental Quality Act (CEQA) and CESA Authority: DFG is a Trustee Agency with the responsibility under CEQA for commenting on projects that could impact plant and wildlife resources. Pursuant to Fish and Game Code Section 1802, DFG has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species. As a Trustee Agency for fish and wildlife resources, DFG is responsible for providing, as available, biological expertise to review and comment on environmental documents and impacts arising from project activities, as those terms are used under CEQA.

DFG is a Responsible Agency when a subsequent permit or other type of discretionary approval is required from DFG, such as an Incidental Take Permit, pursuant to CESA, or a Streambed Alteration Agreement issued under Fish and Game Code Sections 1600 et seq.

DFG's issuance of an Incidental Take Permit and/or a Streambed Alteration Agreement is also considered a "project" subject to CEQA (CEQA Guidelines Section 15378). DFG typically relies on the Lead Agency's CEQA compliance to make findings, pursuant to CEQA Guidelines Section 15091. For the Lead Agency's CEQA document to suffice for CESA permit issuance, it must fully describe the potential project-related impacts to the State-listed species and commit to measures to avoid, minimize, and fully mitigate impacts to these resources. This means that the Project must not diminish the overall populations of State-listed species. A Statement of Overriding Considerations for significant unmitigated impacts to State-listed species will not legally support State take permit issuance. If the CEQA document completed for this Project does not contain these commitments, DFG may need to act as a Lead CEQA Agency and complete a subsequent CEQA document to support permit issuance. This could significantly delay permit issuance and, subsequently, Project implementation.

Mary Dyas
December 31, 2008
Page 3

A complete CESA Incidental Take Permit application from the applicant should provide the following information (CCR, Title 14, §783.2):

- Analysis of the impact of the proposed taking.
- An analysis of whether Incidental Take Permit issuance would jeopardize the continued existence of kit fox and any other State-listed species for which "take" coverage is being sought.
- Measures that minimize and fully mitigate the impacts of the proposed taking.
- A proposed plan to monitor compliance with the minimization and mitigation measures.
- A description of the funding source and level of funding available for implementation of the minimization and mitigation measures.

DFG can provide a complete list of required Incidental Take Permit application components upon request.

San Joaquin Kit Fox

The Project may result in "take" of San Joaquin kit fox. Although focused kit fox surveys were not completed for this Project, the applicant's consultants found a road-killed kit fox on-site, indicating kit fox use of the Project area. In addition, focused surveys on adjacent dry-farmed parcels in 2008 detected San Joaquin kit fox (personal communication, Dan Meade, Althouse and Meade, Inc.). Badger dens and other burrows on-site that were not monitored for kit fox use have a high potential for kit fox occupation, as do the abandoned structures and equipment yards.

Kit foxes are likely to be encountered during construction because they will most likely be on the Project site when construction commences. Grading or trenching equipment could collapse occupied dens or strike individual foxes. Foxes could become trapped in fenced areas. Removing structures and relict farm equipment from the site may displace foxes and cause direct mortality. "Take" and sublethal effects are also likely to occur as a result of habitat loss and increased traffic, as discussed below.

Habitat Characterization: As the PSA discusses, there are differing opinions on the quality of kit fox habitat found on the Project site. Accurate habitat characterization is crucial for establishing an adequate baseline, for informing impact assessment, and for formulating mitigation that is proportionate to the extent of the impacts. It may be beneficial to clarify the baseline wildlife habitat quality, specifically for kit fox, in the FSA. We offer some observations to aid in this clarification.

When the application was filed for this Project and when the initial biological field surveys were completed, neither Section 28 nor Section 33 was in cultivation. They were annual grasslands. Cultivation on these sections has been intermittent in recent decades. Based on aerial photographs available to us, Section 28 was partially cultivated in 1998, mostly cultivated in

Mary Dyas
December 31, 2008
Page 4

2003 and 2005, and not cultivated in 2007. Section 33 was cultivated in 1994, but appears to have not been in cultivation when photographs were taken in 2003, 2005, or 2007. The application for Certification documents describe Section 33 as cultivated and Section 28 as fallowed. The adjacent sections to the east have not been cultivated for many years. It is this intermittent use pattern and the surrounding uncultivated rangelands which allow burrowing owls, kit foxes, tule elk, and pronghorn to persist in the dry-farmed areas in the northern Carrizo Plain, including the Project site. The presence of these and the multiple other special status species is an indicator of the habitat values, which are far greater than many other agricultural areas. In terms of kit fox habitat value, this Project site should not be equated with typical intensive agricultural lands. The Project site's importance in habitat connectivity further increases the kit fox habitat value, as discussed below.

Habitat Loss: The Project would permanently displace and construct exclusionary fencing around 640 acres of San Joaquin kit fox habitat. The construction laydown area would temporarily (approximately 3 years) displace and construct exclusionary fencing around 380 acres of habitat, for a total Project footprint of 1,020 acres (1.6 square miles). San Joaquin kit fox home range estimates range from 1.7 to 4.5 square miles (Cypher 2000, Koopman et al. 2001) which are typically occupied by a mated pair of foxes, a litter during spring and summer, and occasionally adult offspring which aid in pup rearing. The Project would permanently displace an area of habitat greater than the 0.5-mile mean core area found by Koopman et al. (2001), and the total affected area is more than three times the mean. The habitat losses also represent a substantial portion of a home range. Displacing core areas and substantial portions of home ranges would reduce carrying capacity and displace individual foxes. Displacement would expose foxes to proximate causes of "take" associated with increased mortality risks, such as increased predation as a result of not knowing where to find refugia, unfamiliar road crossings, and competition with other kit foxes and canids already occupying the remaining habitat.

The 380-acre temporary impact area would be inaccessible to kit fox for approximately three years, which is within the normal range of a kit fox lifespan. This means that it would not provide forage or denning opportunities for three reproduction cycles. This may reduce litter sizes or the number of litters produced from foxes currently using the area during those three years. If the Project site is fenced initially during pup rearing, juvenile survivorship may also be reduced during that year due to a loss of foraging area. Reduced productivity during the temporary habitat loss would result in reduced productivity for an undetermined number of years after the site is returned to dry farming.

Increased Roadkill Probability: The Project may increase the incidence of San Joaquin kit fox road kills. Of concern are the significant traffic increases identified during construction and operation, including the 84 bus trips per day. It appears that the greatest traffic increases would occur in early morning hours and evening hours when kit foxes are likely to be encountered on roads. The PSA identifies significant traffic increases on roads with very low baseline traffic volumes, such as Bitterwater Road, where foxes are not likely habituated to traffic.

Hels and Buchwald (2001) and Waller et al (2005) found that roadkill probability is primarily a function of traffic volume and the animal's velocity. Based on the peak hour traffic counts provided in the PSA, and the probabilistic roadkill model presented by Waller et al. (2005), the

Mary Dyas
December 31, 2008
Page 5

Project would increase kit fox roadkill probability by 4 percent during construction and then 2.5 percent during Project operation across the entire length of Bitterwater Road (Table 1). For every 100 kit fox road crossing events on Bitterwater Road during peak hours, the Project could cause four additional vehicle strikes compared to baseline conditions. This is based on an assumed kit fox velocity of approximately 1 mile per hour, placing the animal in a 7-foot wide "kill zone" (width of a vehicle) for 5 seconds during a road-crossing event. The road mortality probability increase may be even greater considering that foxes are often encountered foraging, standing, sitting, and lying down in rural roadways, exposing them to vehicle strikes for much longer than 5 seconds. Cypher et al. (2005) found that kit foxes did not avoid roads and often foraged along roads.

Table 1. Kit Fox Road Mortality Probability Increases

Kit Fox Velocity	Time Spent in roadway Kill Zone per Lane (seconds)	% Probability Baseline 2010	% Probability during CESF Construction 2010	% Probability during CESF Project Operation 2011
20 mph	0.23864	0.1	0.3	0.2
10 mph	0.47727	0.1	0.5	0.4
4.772727 mph	1	0.3	1.1	0.8
0.9545454 mph	5	1.4	5.4	3.9

The Project would result in appreciable roadkill probability increases in an area considered essential for maintaining and recovering the San Joaquin kit fox. The cumulative road mortality increase resulting from the three proposed Carrizo Plain solar energy projects may be much greater; traffic projections for the other two projects were not yet available. The FSA should commit to mitigating the increased kit fox roadkill. Since reducing vehicle trips has already been proposed by the applicant, the only way to fully mitigate the effects of "take" resulting on roadways may be to provide for increased kit fox production on mitigation lands.

In addition to the Bitterwater Road traffic increases, the PSA identifies significant traffic increases on SR-58 as a result of vehicle trips that originate from Interstate 5 and traverse nearly the entire remaining kit fox range. The Optisolar and Sunpower projects proposed for the Carrizo Plain are also likely to incur vehicle trips along SR-58. This may result in potentially significant traffic increases along a route which under baseline conditions would experience only modest traffic increases. SR-58 may become a substantially increased mortality source bisecting the majority of the remaining kit fox habitat in the western San Joaquin Valley. This would be in addition to other routes where traffic volumes are expected to increase independently of any specific projects, such as State Routes 46 and 41. Increased traffic and roadkill on SR-58 may have habitat fragmentation effects which conflict with the recovery goals for kit fox and other upland species.

Mary Dyas
December 31, 2008
Page 6

Project Location and Habitat Connectivity: Barriers to wildlife movement result in higher wildlife mortality and lower reproduction. This leads to smaller populations and lower population viability. Conversely, high landscape connectivity permits metapopulation functions. Connectivity allows dispersal and other wildlife movements to rescue declining local populations, repopulate unoccupied habitat, expand into new habitat, shift distribution in response to events such as climatic shifts or habitat displacement, and minimize the negative effects of inbreeding (Wilcox and Murphy 1985, Lande 1987). These are the functions that the recovery plan (USFWS 1998) intends to restore, enhance, and maintain in order to recover and maintain the San Joaquin kit fox population.

The Project is at the south end of the corridor linking the Carrizo Plains Natural Area (now Carrizo Plains National Monument) to the satellite populations in the Salinas River and Pajaro River watersheds. This area also provides the most viable connection to populations in the western San Joaquin Valley, by way of the lowest elevations and lowest relief areas of the Temblor Range, near Bitterwater Valley and Antelope Valley. The recovery plan identifies this corridor as essential to maintaining and recovering the San Joaquin kit fox population. The specific recovery action which applies to this site is as follows:

Protect and enhance corridors for movement of kit foxes through the Salinas-Pajaro Region and from the Salinas Valley to the Carrizo Plain and San Joaquin Valley. (USFWS 1998).

The kit fox habitat which connects the Salinas Valley to the Carrizo Plain, and the Salinas Valley to the San Joaquin Valley, is the San Andreas rift zone and Temblor Range north of the Carrizo Plain. No other habitat is geographically situated to provide this connection.

Topography appears to be the primary constraint on kit fox movements in undeveloped areas without irrigated agriculture. Warrick and Cypher (1998) found that kit fox capture rates were negatively associated with topographic ruggedness. Koopman et al. (2001) found that the mean slope for kit fox movements was 3° (5.2 percent slope), and that only 0.9 percent of movements occurred on slopes greater than 6° (10.5 percent slope). Based on these findings, corridor conservation efforts should be focused on habitat linkages with the flattest terrain available.

The Carrizo Plain north of the National Monument, including the Project site, is low-relief kit fox habitat. The nearly flat terrain makes this area highly conducive to kit fox movements in and out of the core population at the National Monument. Slopes are steep in every direction from the core population, except north. The Caliente and La Panza Mountains constrain kit fox movements on the west, while the Calientes and Temblors constrain movements on the south and east. In addition, the only connection to the Salinas Valley is to the north of the National Monument. The southern connection to the San Joaquin Valley is steep, contains dense shrub communities, and is a much narrower connection than the northern linkage. In addition, the southern connection links the National Monument to only the Cuyama Valley and the extreme southern end of the San Joaquin Valley.

Another important habitat connectivity consideration is the Palo Prieto Conservation Bank. This Conservation Bank conserves San Joaquin kit fox habitat along the San Andreas Rift Zone north of the Project site. Palo Prieto is ideally situated in the linkage connecting the Salinas

Mary Dyas
December 31, 2008
Page 7

Valley, the San Joaquin Valley, and the Carrizo Plain. Projects which degrade the northern habitat linkage with the Carrizo Plain also further isolate and reduce the conservation value of kit fox habitat at the Palo Pieta Conservation Bank. This would be a major setback in the efforts to recover the San Joaquin kit fox.

Mitigation: CESA requires that "the impacts of the authorized take shall be minimized and fully mitigated" (Fish and Game Code § 2081). We agree with your staff's assessment that the applicant's proposal to compensate for permanent kit fox habitat impacts at a 1.1:1 ratio, to provide no compensation for the 380-acre temporary impact, and to place the mitigation lands under an agricultural easement would not minimize and fully mitigate the San Joaquin kit fox impacts. The Project with the applicant's mitigation proposal would result in a net loss of habitat area and a reduced kit fox population. In addition, the proposed agricultural easement would not provide the habitat protection or management tools necessary to meet Incidental Take Permit issuance criteria. Incidental Take Permit mitigation lands are conserved through conservation easements or fee-title ownership held by DFG or a DFG-approved non-profit conservation organization.

"Fully mitigated" requires offsetting the Project's expected incidental take of individual kit foxes and impacts to their habitat. Because the impacts of the taking include all kit fox impacts resulting from Project activities which cause the proposed taking, the analysis and ultimate determination of full mitigation considers both direct and indirect impacts (including spatial, temporal, sub lethal, and cumulative impacts). The desired outcome of full mitigation is to ensure that the status of the covered species is preserved such that it is able to continue to survive and thrive after completion of the Project and mitigation.

This requires offsetting the "take" of individual foxes by producing more foxes. Producing more foxes on less habitat requires improving the remaining habitat. It is not clear that adjacent habitats in their current conditions could absorb additional foxes displaced by this Project and the additional solar energy projects proposed for the Carrizo Plain. Mitigation lands will require enhancement to support a higher kit fox density than under current conditions.

Similarly, the kit fox habitat linkage remaining upon Project completion must provide at least the same level of habitat connectivity as baseline conditions. Because of the direct and cumulative corridor constriction, habitat within the remaining linkage will require enhancement if it is to provide the same level of connectivity as the much wider, existing habitat linkage through the northern Carrizo Plain.

Providing for the same total number of kit foxes and the same level of habitat connectivity as baseline conditions may require a substantial commitment of land area. Mitigation lands within and adjacent to the remaining habitat linkage (i.e., between this Project and the Sunpower project to the east) may mitigate the effects of "take" during construction, "take" resulting from the increased kit fox road mortality probability, the permanent and temporary habitat loss, and the habitat fragmentation effects. The habitat fragmentation effects could only be offset by conserving and improving permeability of the low-relief lands between and adjacent to the proposed solar projects; no substitute for this habitat linkage is available.

Mary Dyas
December 31, 2008
Page 8

Kit fox home range estimates are 1.7 to 4.5 square miles. The mean core area is estimated at 0.5 square miles. The Project would permanently displace 1 square mile and displace an additional 0.6 square miles for three years. The total habitat loss is nearly the size of a home range and three times the size of a core area—enough area to support a pair of foxes, pup rearing, and potentially an adult family member. Because presence of kit fox was documented on-site and on adjoining dry-farmed areas, it is reasonable to assume that the proposed habitat loss is likely to displace a pair of foxes or at least a substantial portion of their home range. Therefore, the FSA should identify mitigation which enhances remaining habitat such that it will support at least one additional pair of foxes. Further measures will be required to offset reduced habitat connectivity and increased vehicle strikes.

Because the remaining habitat is already occupied by kit foxes, the mitigation plan must be reasonably expected to increase kit fox population density on the mitigation lands. The most effective tool would be to take suitable lands out of crop production. Bidlack (2007) found that kit fox sightings increased significantly along Soda Lake Road after dry-farmed areas were taken out of production and re-colonized by kangaroo rats, an important kit fox prey item. Restoring croplands to grasslands or suitable shrublands would likely provide the greatest increase in potential kit fox abundance per unit area.

As the PSA discusses, the specific areas required to fully mitigate the kit fox impacts have not been identified. A least-cost path analysis, including core area and patch analyses, is proposed for assessing baseline connectivity and habitat availability, as well as cumulative effects and effectiveness of proposed mitigation. The GIS-based model will aid in identifying potential full-mitigation scenarios which reflect the context of this Project's impacts within a critical habitat linkage. We support this approach and will continue working with you on this analysis.

The FSA will have to commit to full mitigation to meet Incidental Take Permit issuance criteria. The FSA should identify the amount and location of mitigation lands required for full mitigation. If the FSA cannot commit to conserving specific parcels, it should identify the larger area within which mitigation lands could be acquired, along with the amount of land required, to fully mitigate the Project's individual and cumulative kit fox impacts. Based on our kit fox habitat functional assessment (the Kit Fox Evaluation Sheet included in the PSA), which has been used in San Luis Obispo County for many years, we recommend that 4,270 acres of kit fox habitat be conserved as mitigation for this Project (sum of 640 acres x 5 and 380 acres x 4). The FSA should demonstrate how the amount, location, and management of mitigation lands would increase the number of kit foxes on those lands in perpetuity and at a rate which fully offsets the Project's individual and cumulative effects to the kit fox population, including the direct and indirect effects discussed above.

The FSA must commit the applicant to providing/assuring adequate funding to implement all mitigation measures, including the endowment discussed in the PSA, land/lease acquisition, restoration, and monitoring. Funding for any measures that are not completed prior to Project implementation must be secured through an Irrevocable Letter of Credit or equivalent mechanism approved by the Office of the General Counsel (OGC). The securities would be released as each phase of mitigation is accomplished. An endowment to cover costs of perpetual mitigation site monitoring and management will also be required. The endowment

Mary Dyas
December 31, 2008
Page 9

funds must be held in perpetuity. The California Wildlife Foundation is currently the preferred endowment holder other than DFG. An approval process is available for other third-party non-profit conservation organizations to hold endowments should the applicant wish to use another group. The easement or title must be held by an approved third party non-profit conservation organization or DFG.

Birds

The Fish and Game Code protects birds, their eggs, and nests including: Sections 3503 (regarding unlawful "take," possession or needless destruction of the nest or eggs of any bird), 3503.5 (regarding the "take," possession or destruction of any birds-of-prey or their nests or eggs), and 3513 (regarding unlawful "take" of any migratory nongame bird). These Fish and Game Code Sections do not allow for "take" nor is there a mechanism (permitting process) to allow for "take" unless a species is also listed under CESA. As a result, the Project and associated conditions of approval must include measures that prevent "take" of birds.

As the PSA notes, monitoring of the Solar One site in the Mojave Desert documented substantial avian mortality from both concentrated light energy and collisions with reflectors. Collisions caused most of the mortality. The PSA discusses the reduced risk of mortality from heat compared to Solar One, but does not discuss the risk of collisions with mirrors. This risk is likely much greater than at Solar One because this Project would cover 640 acres as opposed to the 80 acres at Solar One. The Project site also supports a greater diversity and abundance of resident and wintering raptors and special status bird species, including fully protected species, compared to most desert sites, such as Solar One and Kramer Junction. As the PSA discusses, the Project site supports burrowing owls, loggerhead shrike, golden eagles, prairie falcon, wintering ferruginous hawks and bald eagles, and many other special status species that may collide with guy wires and reflectors. Flight diverters on the guy wires may reduce the mirror collision risk, although we have found no evidence that this would be the case. We were unable to locate any bird mortality monitoring data from facilities which have guy wire systems over reflector arrays. We recommend developing an adaptive management program as we recommended in our March 26, 2008, letter regarding the Project's application for certification.

Bird flight diverters should be installed on the guy wires, and the site should be monitored for their effectiveness for a minimum of five years. If unauthorized "take" is occurring, then the applicant should be required to modify the Project features to prevent additional "take" of birds. Modifications and monitoring should continue until it is determined that unauthorized "take" is no longer occurring.

Pronghorn

It is DFG's opinion that the Project has the potential to substantially restrict pronghorn movement, reduce pronghorn habitat, and threaten this population's viability.

DFG's bi-annual aerial counts have established that the specific pronghorn group which inhabits the northern California Valley, where the Project is proposed, frequently utilizes the Project site and adjoining habitat on both sides of SR-58. Department staff verified that pronghorn cross

Mary Dyas
December 31, 2008
Page 10

SR-58 at the Project site. We are unaware of other locations where pronghorn cross SR-58. For this group to remain viable, free movement across the highway and within its range is essential to access seasonably variable water and food sources. Maintaining connectivity between this group, the Carrizo Plain National Monument groups, and the Cholame Valley group will be essential to maintaining the overall San Luis Obispo County pronghorn population. The fact that the affected group so regularly crosses the highway and its associated fences speaks to its requirement to access all its territory to obtain necessary resources; pronghorn road avoidance behaviors and difficulties in crossing fences are well documented in the literature. The Project would create a substantial, permanent, impermeable barrier for pronghorn at the highway and within the core of one group's home range. It would further degrade connectivity between all the pronghorn groups in San Luis Obispo County.

Loss of foraging area and habitat connectivity would extend well beyond the Project footprint. Pronghorn are inherently wary of human activity and structures. Light, noise, buildings, reflectors, and human activity would likely cause pronghorn to avoid the Project area during and after construction by a wide margin, rendering much of the area surrounding the site unusable. Increased traffic on SR-58 would also reduce the crossing opportunities and increase the roadkill risk for this diurnal species.

The proposed impermeable fencing is also likely to inhibit fawns and adults during pursuits, thereby increasing coyote predation. This is a known effect on pronghorn of livestock fencing and would be even greater with the proposed chain-link fence. This is one reason not to consider forage or water sources at the Project site boundaries to be effective mitigation.

The FSA should include a pronghorn habitat compensation measure to mitigate the pronghorn habitat fragmentation and loss of home range if it is to conclude that pronghorn impacts would be mitigated. The current measures do not discuss offsetting the habitat loss. Kit fox mitigation lands in the northern Carrizo Plain could offset pronghorn habitat losses by managing the lands to increase carrying capacity for pronghorn. Management may include removing or modifying fencing to eliminate movement barriers and reduce predation, modifying agricultural practices to improve forage, and providing water sources. We recommend that the Biological Resources Mitigation Implementation and Monitoring Plan include compensatory pronghorn habitat mitigation.

Measure BIO-18 in the PSA addresses the loss of highway crossing potential. To accomplish this measure, we encourage the applicant to research the work of Marcel Hujser of the Western Transportation Institute to develop the most effective pronghorn road crossing warning system. Pronghorn will continue to cross SR-58 if viable habitat remains available on both sides and fencing allows passage. Creating established crossing locations with fencing conducive to passage should result in regular pronghorn crossings at fixed locations. An animal-triggered warning system for drivers, triggered by animals at the established pronghorn crossing locations, may mitigate the increased likelihood of pronghorn-vehicle collisions resulting from the Project's significant daytime traffic increases.

Mary Dyas
December 31, 2008
Page 11

Tule Elk

The Project would permanently displace 1 square mile of habitat, reducing the area's capacity to support tule elk. The cumulative loss of approximately 10.5 square miles of this elk subpopulation's home range (from this Project and the Optisolar project) may reduce the subpopulation to less than self-sustaining levels. Direct impacts, cumulative habitat losses, and habitat connectivity impacts should be mitigated as discussed above for pronghorn.

Construction Laydown Area

The construction laydown area is intended to accommodate a fueling station adjacent to the intermittent creek in Section 33. We recommend that this facility be relocated in order to minimize the potential for spills or leakage to adversely affect the adjacent stream, and downstream resources. Relocating this facility away from that area would have the added advantage of obviating the need for crossings that may require Department approval, pursuant to Fish and Game Code Section 1600 et seq.

Vegetative Screening

The PSA mentions vegetative screening for aesthetic impacts. Rows of trees would be planted on parcels within a mile of the Project and potentially at the Project perimeter. The PSA does not identify the specific locations of vegetative screens. The PSA does not establish a baseline or disclose the effects of planting the vegetative screens.

Rows of vegetation may affect pronghorn habitat use because pronghorn can perceive them as barriers to movement. The vegetation may also increase cover for pronghorn and kit fox predators, and directly displace sensitive biological resources, such as rare plant populations, vernal pools, and kit fox dens. If vegetative screening is proposed, then the locations should be inventoried and disclosed so that biological impacts may be assessed in the FSA.

Thank you for the opportunity to comment on the PSA. If you have any questions regarding these comments, please contact Dave Hacker, Environmental Scientist, at 3196 Higuera Street, Suite A, San Luis Obispo, California 93401, by telephone at (805) 594-6152, or by email at dhacker@dfg.ca.gov.

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Mary Dyas
December 31, 2008
Page 12

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Mary Dyas
December 31, 2008
Page 13

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BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT
COMMISSION OF THE STATE OF CALIFORNIA
1516 NINTH STREET, SACRAMENTO, CA 95814
1-800-822-6228 – WWW.ENERGY.CA.GOV

APPLICATION FOR CERTIFICATION
FOR THE *CARRIZO ENERGY*
SOLAR FARM PROJECT

Docket No. 07-AFC-8

PROOF OF SERVICE
(Revised 11/25/2008)

INSTRUCTIONS: All parties shall either (1) send an original signed document plus 12 copies or (2) mail one original signed copy AND e-mail the document to the address for the Docket as shown below, AND (3) all parties shall also send a printed or electronic copy of the document, which includes a proof of service declaration to each of the individuals on the proof of service list shown below:

CALIFORNIA ENERGY COMMISSION

Attn: Docket No. 07-AFC-8
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DECLARATION OF SERVICE

I, Hilarie Anderson, declare that on January 5, 2009, I deposited copies of the attached CDFG's PSA Comments in the United States mail at Sacramento, CA with first-class postage thereon fully prepaid and addressed to those identified on the Proof of Service list above.

OR

Transmission via electronic mail was consistent with the requirements of California Code of Regulations, title 20, sections 1209, 1209.5, and 1210. All electronic copies were sent to all those identified on the Proof of Service list above.

I declare under penalty of perjury that the foregoing is true and correct.

Original Signature in Dockets
Hilarie Anderson